# Vermiculture Improves Urban Farming in Argentina

**Women from Empalme Graneros show off produce grown using organic compost. (Photo courtesy of Eduardo Spiaggi**

**2002-08-26**

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Impoverished citizens of Rosario, Argentina's third largest city, are stepping up efforts to farm in urban neighbourhoods — by using California red worms. Vermiculture (a method of composting fruit and vegetable waste using earthworms) is proving to be an inexpensive and easy way to create high-quality organic fertilizer. It is also helping improve the local environment.

These are the findings of Eduardo Spiaggi, a researcher at the National University of Rosario, who looked at the impact of vermiculture on urban agriculture as part of his Master's degree. Spiaggi was awarded an AGROPOLIS award in 1999 to fund this research. The AGROPOLIS awards program supports innovative research by graduate students in developing countries that will add to the body of knowledge of urban agriculture. AGROPOLIS is a component of the Global Initiative of the Support Group on Urban Agriculture (SGUA) and is administered by Canada's International Development Research Centre (IDRC).

**Urban agriculture — a growing trend**

Urban agriculture is a growing trend in cities in developing countries. By farming in the city — in neighbourhood gardens, on unused land, or on rooftops, for example — urban dwellers are able to put more and better food on their table, and earn some extra money. Worldwide, some 800 million people are involved in urban agriculture, growing fruits, vegetables, and herbs, as well as raising livestock. In fact, about 15 percent of all food eaten in cities is grown by city dwellers.

It is generally the urban poor who start growing food in the city to feed their families. In Argentina, as Spiaggi explains, "land is in the hands of fewer and fewer people. A lot of farmers are going to the city and they are without work now."

**Unemployment in Rosario City**

The city of Rosario, an urban centre of more than 1.2 million inhabitants, has the country's highest unemployment rate – more than 22 percent. And the city has been particularly affected by Argentina's declining economy. Hundreds of small and medium-sized enterprises have shut down, and there is a constant migration of people to the city from rural areas. Many come to settle in the neighbourhood of Empalme Graneros.

Ten years ago, Empalme Graneros was a large, empty flood plain by the banks of the *Arroyo Ludueñ a*. "There are now 1,300 families living here, and more families continue to arrive from the north of the country," says Spiaggi. More than a third of people in the neighbourhood live in poverty, most in extreme poverty, he adds.

**Vermiculture to feed urban gardens**

Family and community gardens were organized in 1990 in Empalme Graneros. In 1991, a project to compost waste using vermiculture was started. In 1997, with the support of various international donors, Spiaggi began his research to demonstrate the viability of urban agriculture and its impact on sustainable development.

Although Spiaggi's research had many components, testing the effectiveness of low-cost vermiculture in a large city farming operation was one of the most important. Vermiculture creates a "closed system," an endless cycle of waste recycling. Organic wastes such as discarded fruit and vegetable trimming are fed to worms – particularly red worms – living in large, soil-filled containers. The worms eat the organic matter, turning it into compost that can be used to fertilize crops. Unused plant material from the vegetable plots and other organic wastes continue to be fed to the worms. Excess worms are sold to local fishers. Spiaggi determined an extraction rate of 600 worms per bed a week could take place without compromising the sustainability of the system.

The system is efficient. "Five tonnes of waste were processed in 15 vermiculture beds, and 2.6 tonnes of vermicompost were produced per year," says Spiaggi.

**Helping crop production and the environment**

Vermiculture has had a beneficial impact on both the participants' crop yields and the environment, he adds. For example, tomato plants fertilized with vermicompost produced more and heavier tomatoes than those grown without compost. In addition, soil enriched by compost retained more moisture, so less water was needed for irrigation.

The research also revealed that a vermiculture operation cost almost nothing to set up and run, and that the techniques involved were simple to teach and use. More than 80 people have been trained and are participating in the project after learning how to use resources (wastes, water, fertilizers) more efficiently. If you take into account the families of those trained, the impact of the project extends to 350 people, says Spiaggi.

**Building on existing systems**

A key factor in successfully establishing vermiculture was that many people in the neighbourhood were already collecting garbage around the city – especially in parts of the city where garbage was not collected by city sanitation crews.

"Several thousands of people are estimated to earn a living from the informal collection of trash," says Spiaggi. They sort the trash and separate out plastics, cardboard, metals, and glass for resale. Before the project was started, organic waste (from fruits and vegetables, for example) was thrown away in informal city dumps. These dumps, which are often close to homes, can pose health hazards. By recycling organic waste into compost, the project had the additional benefit of reducing the quantity of dumped waste.

**Contribution to community development**

However, the most significant impact of the project, Spiaggi believes, is its contribution to community development.

During the course of the project, weekly meetings were held with the neighbourhood residents, members of nongovernmental organizations, representatives from the municipality, staff from the health centre, and researchers from the university. People discussed a range of issues. Because urban agriculture was one of those issues, it was put on the local community development agenda. Urban agriculture is not only about producing food, or solving a "technical" problem, says Spiaggi. " I think it is very useful and powerful tool for community development."

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